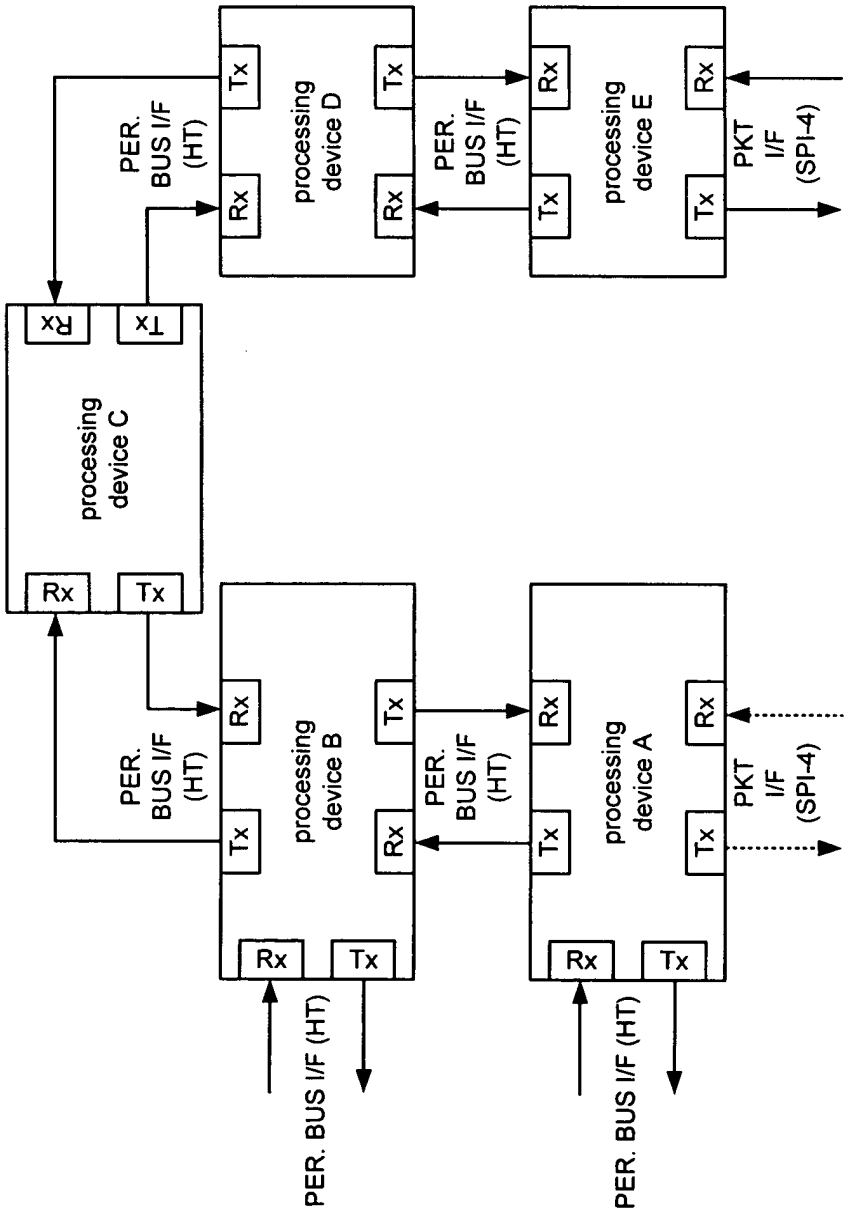


FIG. 1

processing system 10

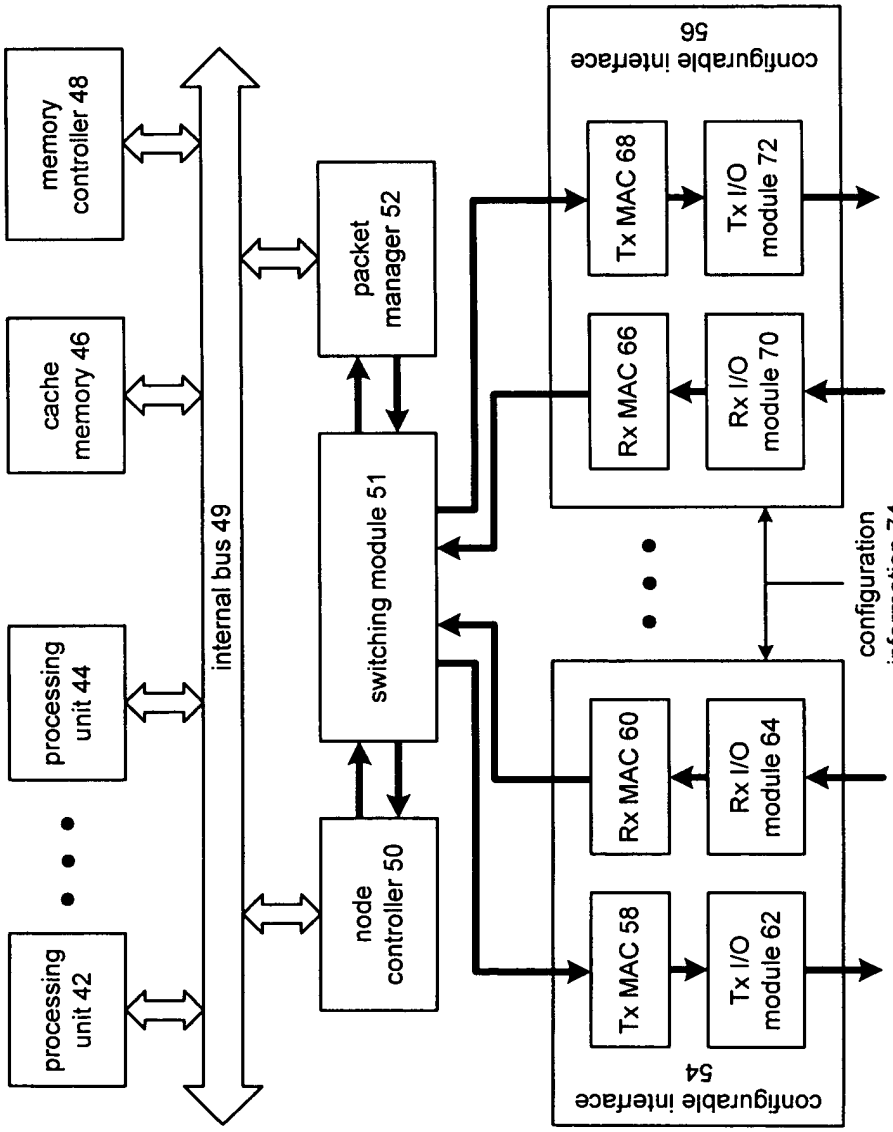


FIG. 2
processing device 20

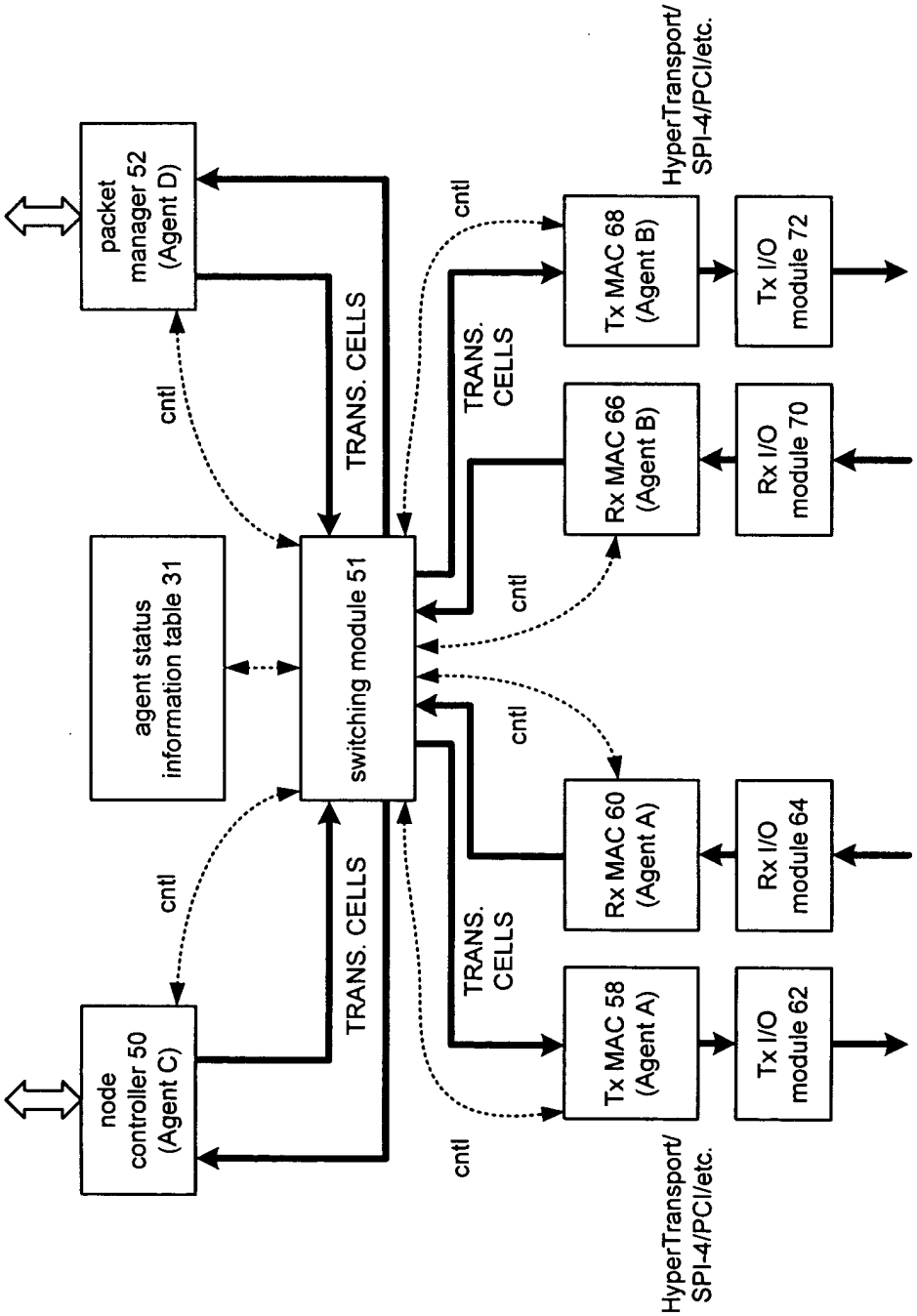
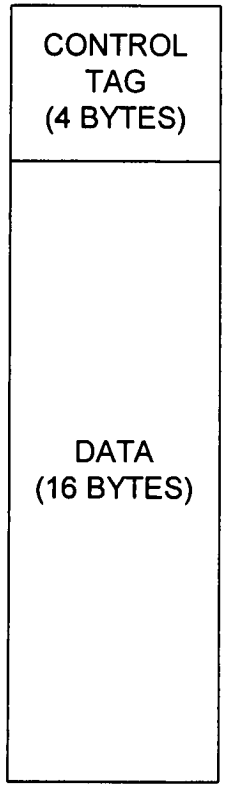


FIG. 3

processing system 20



Transaction Cell - 402

FIG. 4

SRC_AGT_A STATUS	DST_AGT_A STATUS	OVC_1	EOP_ST
SRC_AGT_A STATUS	DST_AGT_A STATUS	OVC_2	EOP_ST
SRC_AGT_A STATUS	DST_AGT_A STATUS	OVC_3	EOP_ST
•	•	•	•
SRC_AGT_A STATUS	DST_AGT_A STATUS	OVC_N	EOP_ST
SRC_AGT_A STATUS	DST_AGT_B STATUS	OVC_1	EOP_ST
SRC_AGT_A STATUS	DST_AGT_B STATUS	OVC_2	EOP_ST
SRC_AGT_A STATUS	DST_AGT_B STATUS	OCV_3	EOP_ST
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
•	•	•	•
SRC_AGT_D STATUS	DST_AGT_D STATUS	OVC_N-2	EOP_ST
SRC_AGT_D STATUS	DST_AGT_D STATUS	OVC_N-1	EOP_ST
SRC_AGT_D STATUS	DST_AGT_D STATUS	OVC_N	EOP_ST

Agent Status Information Table - 31

FIG. 5

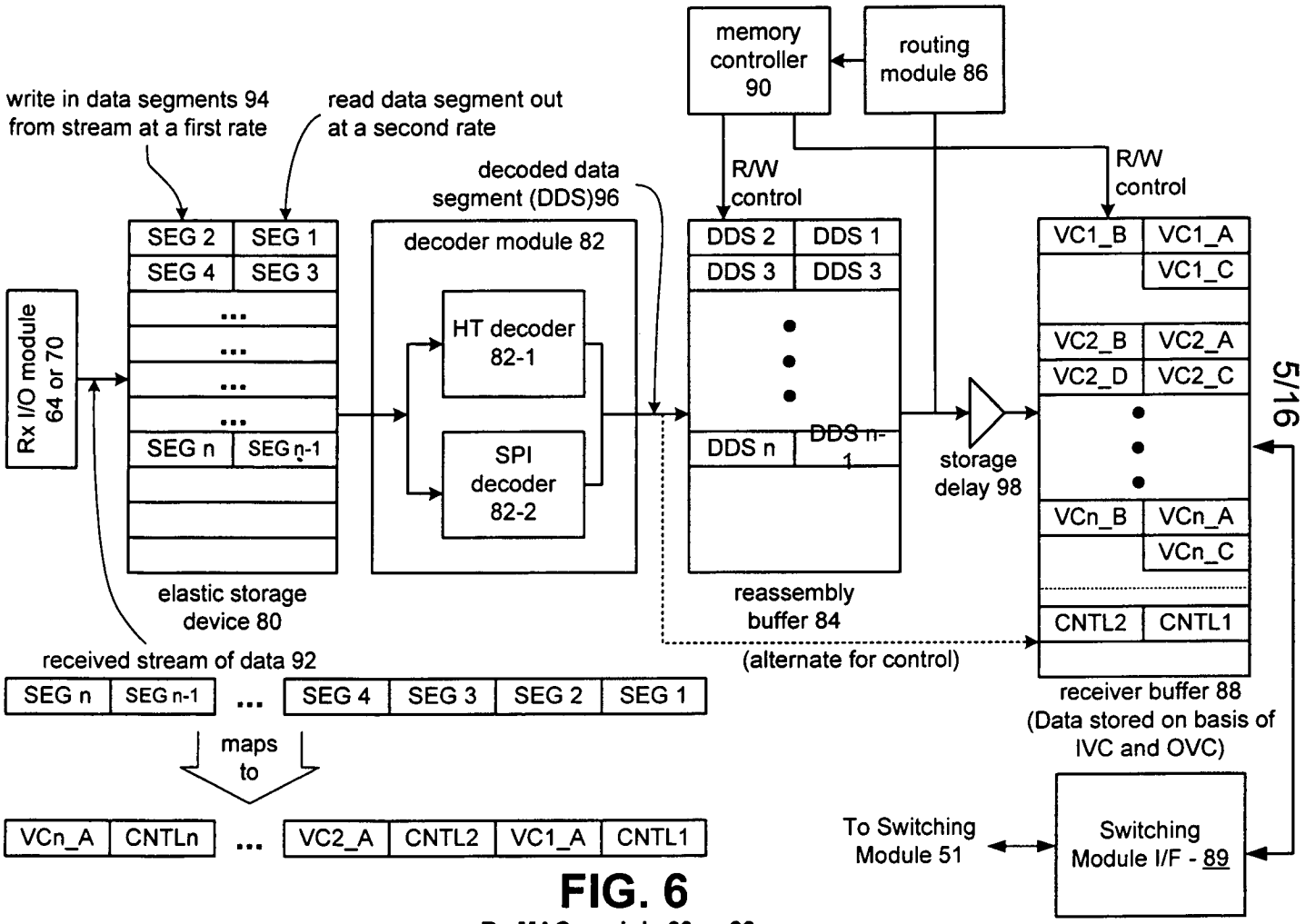


FIG. 6

Rx MAC module 60 or 66

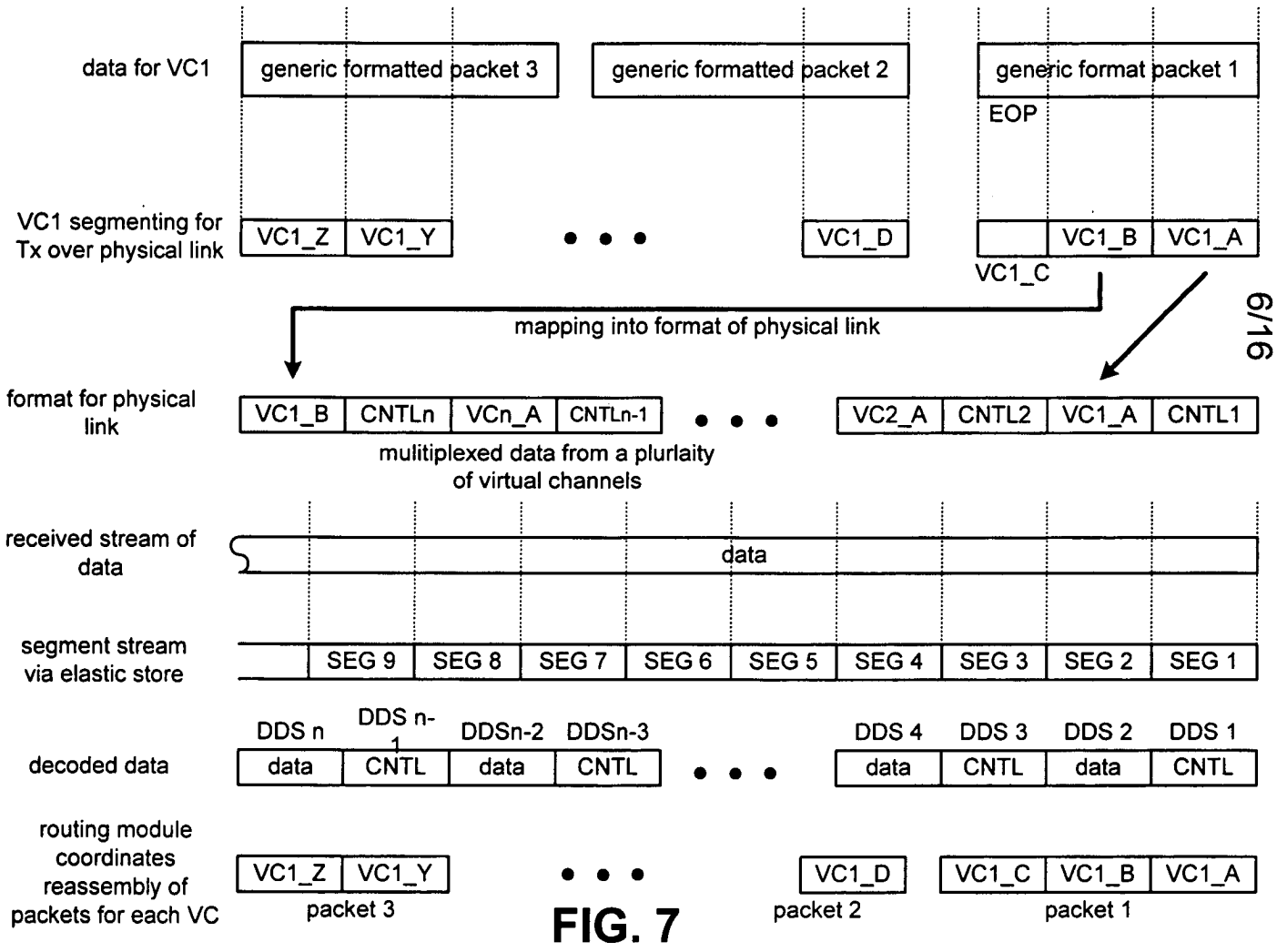

data for VC1
generic formatted packet 3
generic formatted packet 2
generic format packet 1
EOP
VC1 segmenting for Tx over physical link
VC1_Z
VC1_Y
VC1_D
VC1_C
VC1_B
VC1_A
mapping into format of physical link
6/16
format for physical link
VC1_B
CNTLn
VCn_A
CNTLn-1
VC2_A
CNTL2
VC1_A
CNTL1
mulitiplexed data from a plurlaity of virtual channels
received stream of data
data
segment stream via elastic store
SEG 9
SEG 8
SEG 7
SEG 6
SEG 5
SEG 4
SEG 3
SEG 2
SEG 1
decoded data
DDS n
DDS n-1
DDSn-2
DDSn-3
DDS 4
DDS 3
DDS 2
DDS 1
data
CNTL
routing module coordinates reassembly of packets for each VC
packet 3
packet 2
packet 1

FIG. 7

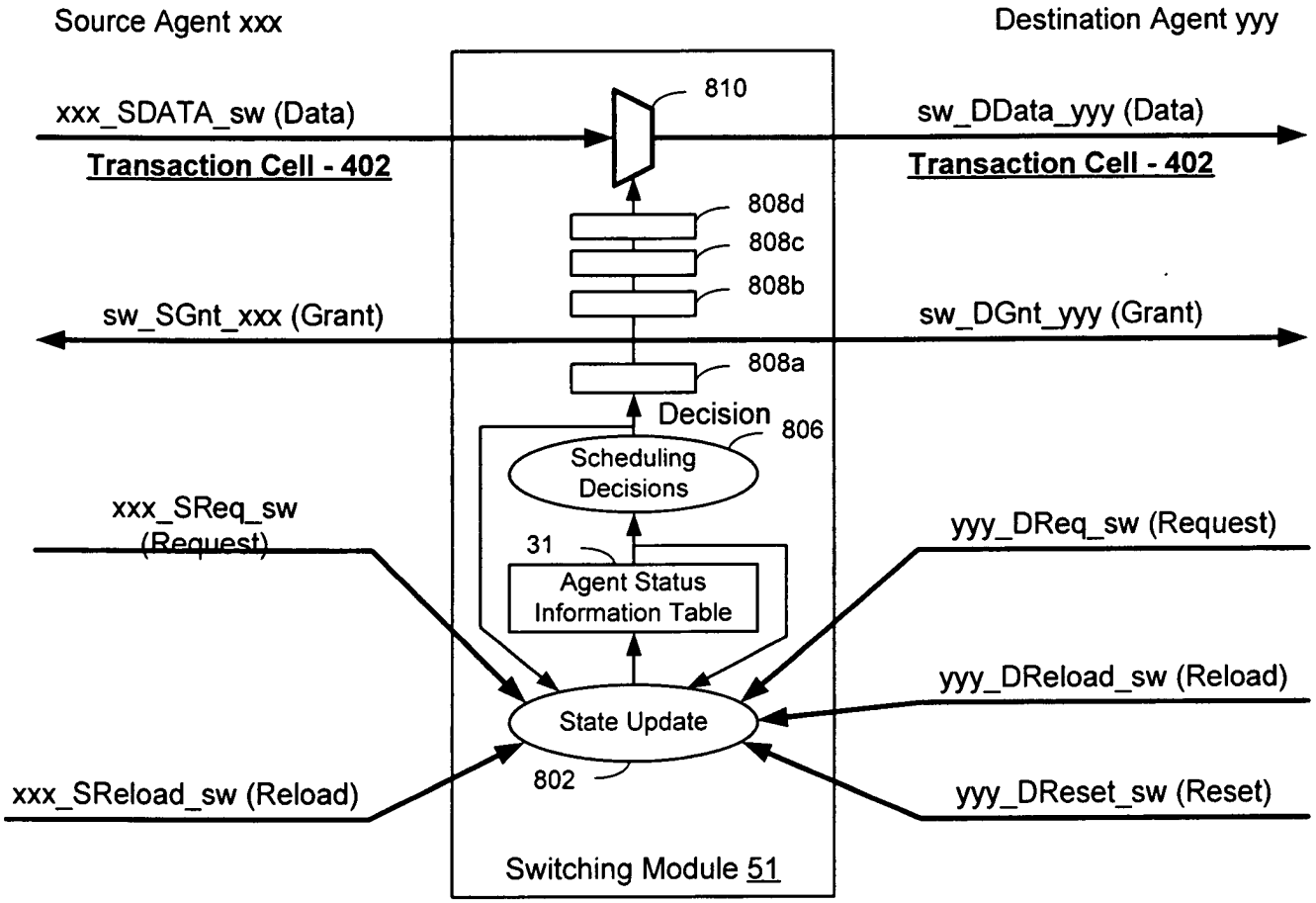

Source Agent xxx
Destination Agent yyy
xxx_SDATA_sw (Data)
Transaction Cell - 402
sw_DData_yyy (Data)
Transaction Cell - 402
810
808d
808c
808b
sw_SGnt_xxx (Grant)
sw_DGnt_yyy (Grant)
808a
Decision
806
Scheduling Decisions
xxx_SReq_sw (Request)
31
Agent Status Information Table
yyy_DReq_sw (Request)
yyy_DReload_sw (Reload)
State Update
802
xxx_SReload_sw (Reload)
yyy_DReset_sw (Reset)
Switching Module 51

FIG. 8

Switch Interface Signals

Agent	Group	Signal	Description
Source Agent	Request	xxx_sreq_agent_sw[2:0]	Destination agent for which data is available
		xxx_sreq_type_sw	Type of data
		xxx_sreq_vc_sw[4:0]	Destination VC for which data is available
		xxx_sreq_eop_sw	EOP for that data
		xxx_sreq_valid_sw	Previous fields are valid
	Grant	sw_sgnt_agent_xxx[2:0]	Destination agent to which data should be sent
		sw_sgnt_type_xxx	Type of data
		sw_sgnt_vc_xxx[4:0]	Destination VC for which data should be sent
		sw_sgnt_valid_xxx	Previous fields are valid
	Reload	xxx_sreload_eop_sw	EOP of the reloaded destination/VC
		xxx_sreload_valid_sw	There is more data on the destination/VC that just got scheduled
	Data	xxx_sdata_bits_sw[127:0]	Payload (16B)
		xxx_sdata_count_sw[3:0]	Count
		xxx_sdata_tag_sw[27:0]	Tag

FIG. 9

Switch Interface Signals

Agent	Group	Signal	Description
Dest. Agent	Request	yyy_dreq_type_sw	Type of data
		yyy_dreq_vc_sw[4:0]	VC for which space is available
		yyy_dreq_valid_sw	Previous field is valid
	Grant	sw_dgnt_agent_yyy[2:0]	Source agent which will send data
		sw_dgnt_type_yyy	Type of data
		sw_dgnt_vc_yyy[4:0]	VC to which data will be sent
		sw_dgnt_eop_yyy	EOP of the data to be sent
		sw_dgnt_valid_yyy	Previous fields are valid
	Reload	yyy_dreload_valid_sw	There is more space on the VC that just got scheduled
	Data	sw_ddata_bits_yyy[127:0]	Payload (16B)
		sw_ddata_count_yyy[3:0]	Data count
		sw_ddata_tag_yyy[27:0]	Tag
	Reset	Reset yyy_dreset_state_sw	State of the credits after reset

FIG. 10

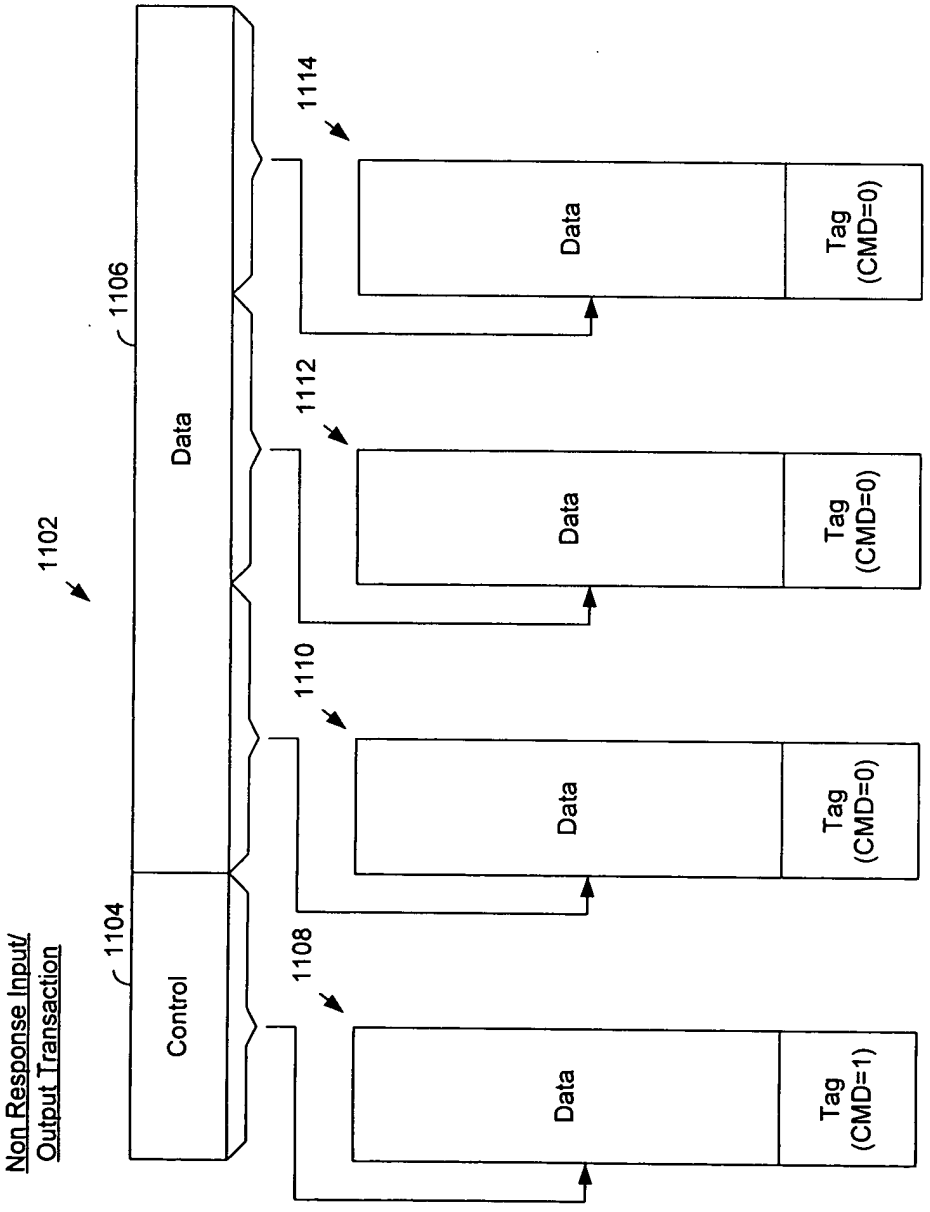

Non Response Input/
Output Transaction
1102
1104
Control
1106
Data
1108
Data
Tag
(CMD=1)
1110
Data
Tag
(CMD=0)
1112
Data
Tag
(CMD=0)
1114
Data
Tag
(CMD=0)
Transaction cell 1
Transaction cell 2
Transaction cell 3
Transaction cell 4

FIG. 11

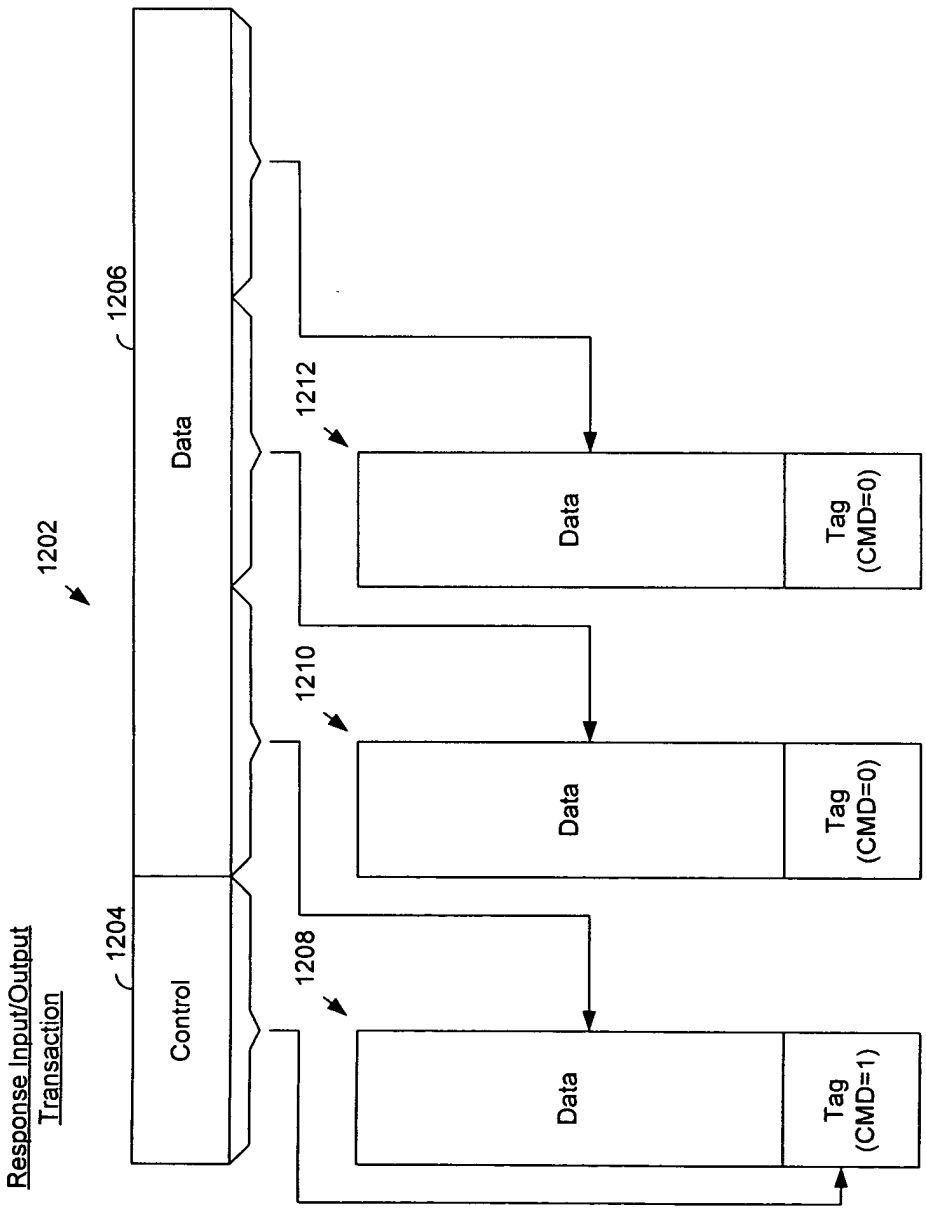

Response Input/Output Transaction
1202
1204
Control
1206
Data
1208
Data
Tag (CMD=1)
1210
Data
Tag (CMD=0)
1212
Data
Tag (CMD=0)
Transaction cell 1
Transaction cell 2
Transaction cell 3

FIG. 12

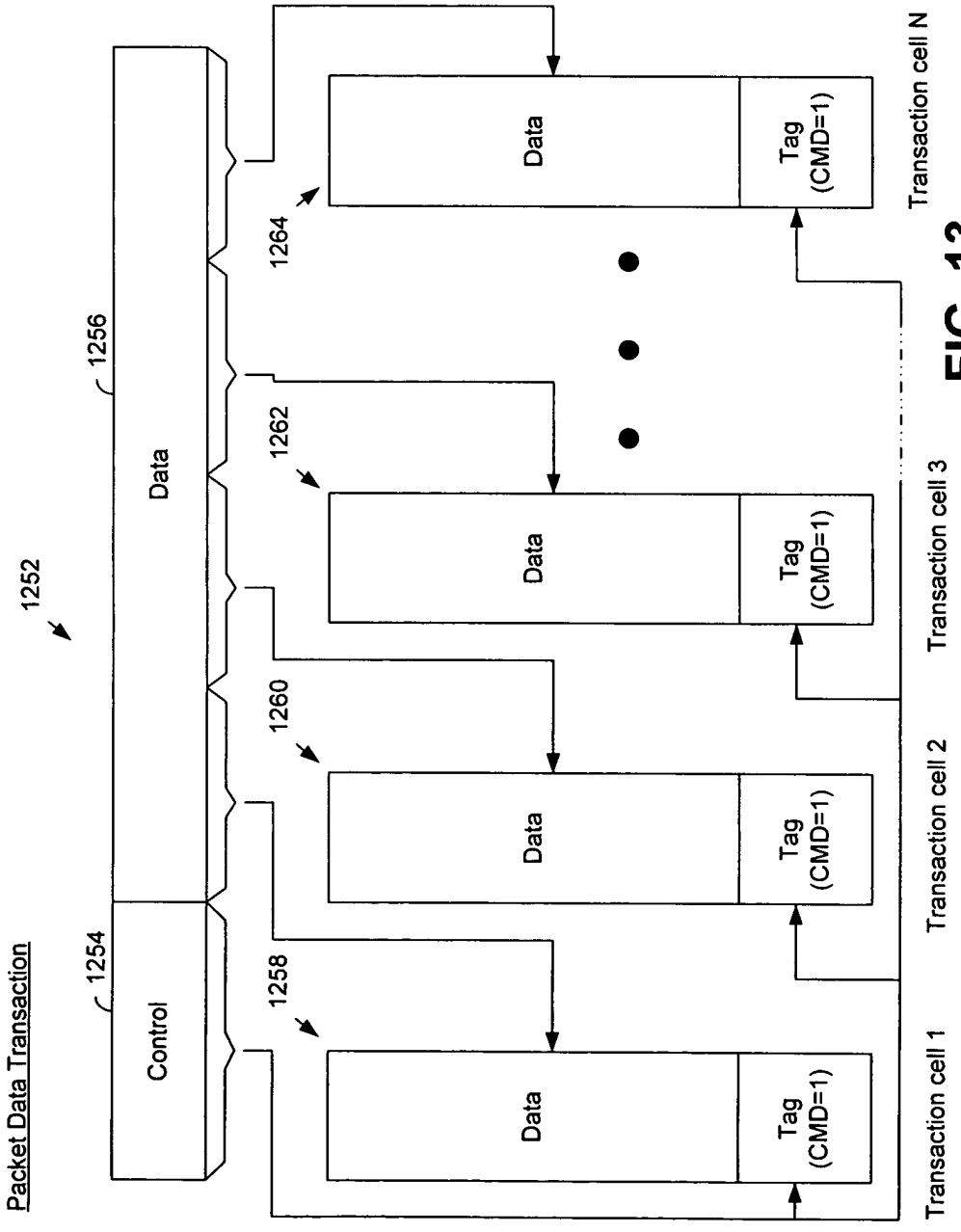

Packet Data Transaction
1252
1254
Control
1256
Data
1258
Data
Tag (CMD=1)
Transaction cell 1
1260
Data
Tag (CMD=1)
Transaction cell 2
1262
Data
Tag (CMD=1)
Transaction cell 3
1264
Data
Tag (CMD=1)
Transaction cell N

FIG. 13

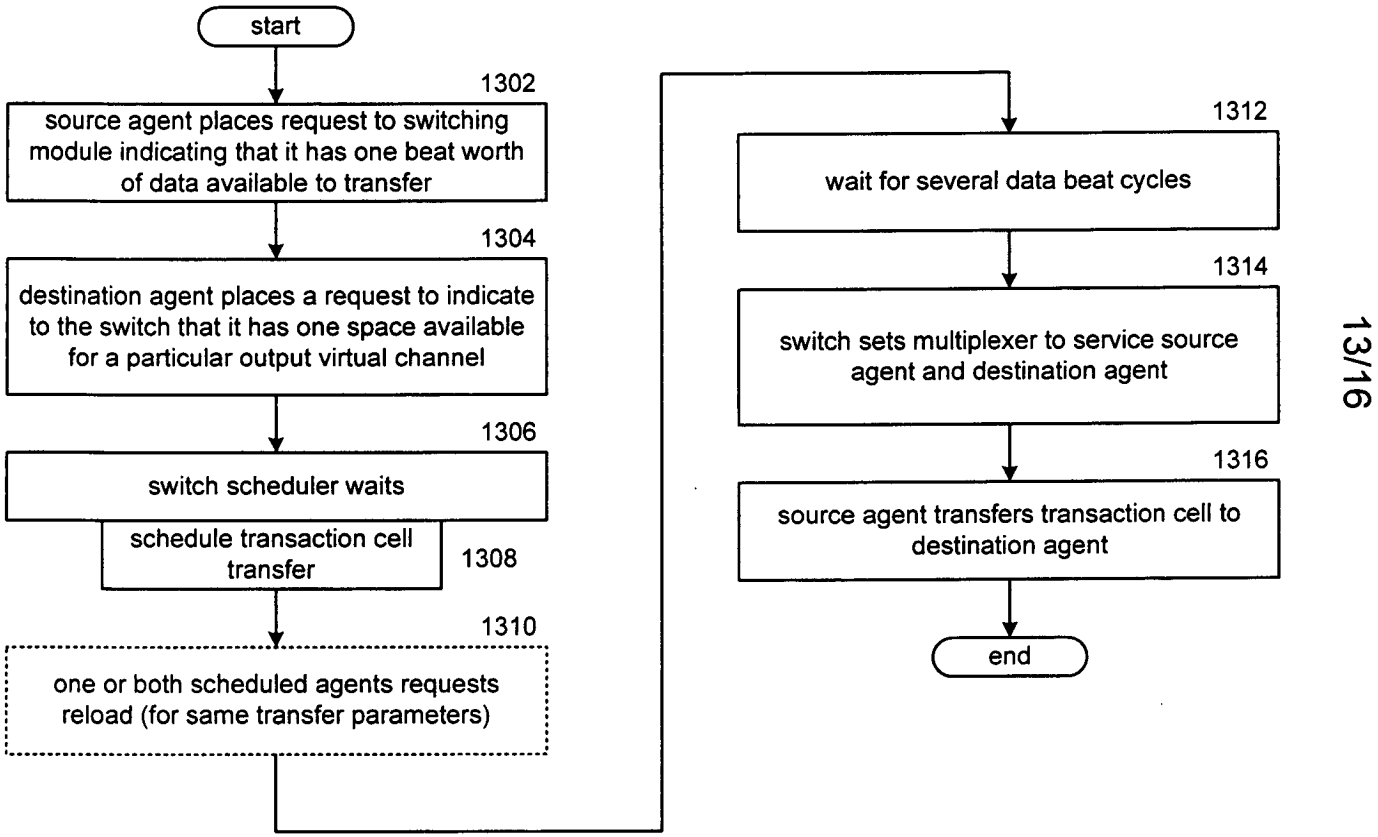

start
1302
source agent places request to switching module indicating that it has one beat worth of data available to transfer
1304
destination agent places a request to indicate to the switch that it has one space available for a particular output virtual channel
1306
switch scheduler waits
schedule transaction cell transfer
1308
1310
one or both scheduled agents requests reload (for same transfer parameters)
1312
wait for several data beat cycles
1314
switch sets multiplexer to service source agent and destination agent
1316
source agent transfers transaction cell to destination agent
end

FIG. 14

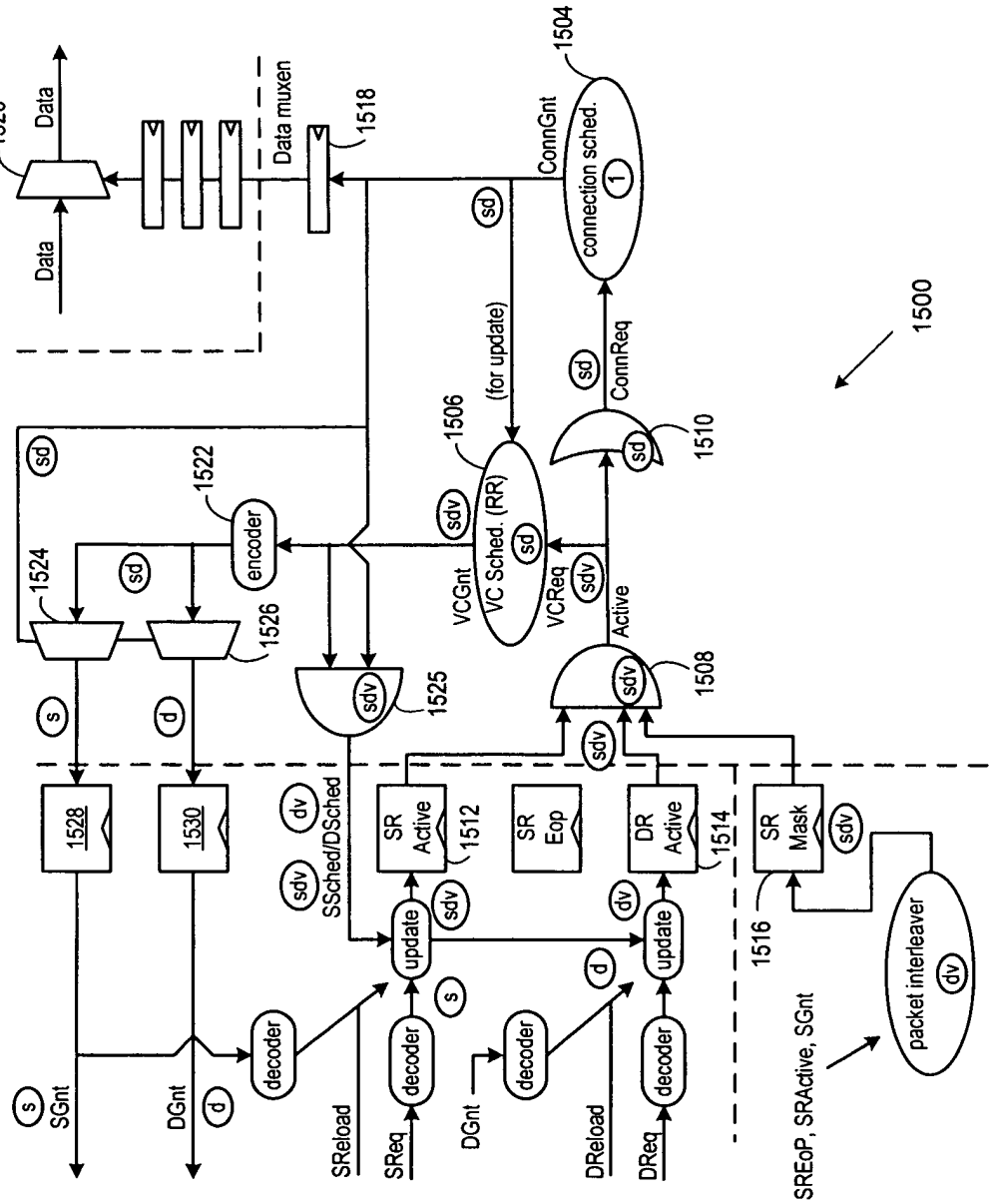

1500
1520
Data
Data
Data muxen
1518
1504
ConnGnt
connection sched.
1
sd
(for update)
sd
ConnReq
1506
1510
sdv
VC Sched. (RR)
sd
VCGnt
VCReq
sdv
Active
1522
encoder
1524
1526
1525
1508
1528
1530
dv
SSched/DSched
SR Active
1512
SR Eop
DR Active
1514
SR Mask
1516
update
update
packet interleaver
decoder
decoder
decoder
decoder
SGnt
DGnt
SReload
SReq
DGnt
DReload
DReq
SREoP, SRActive, SGnt

FIG. 15

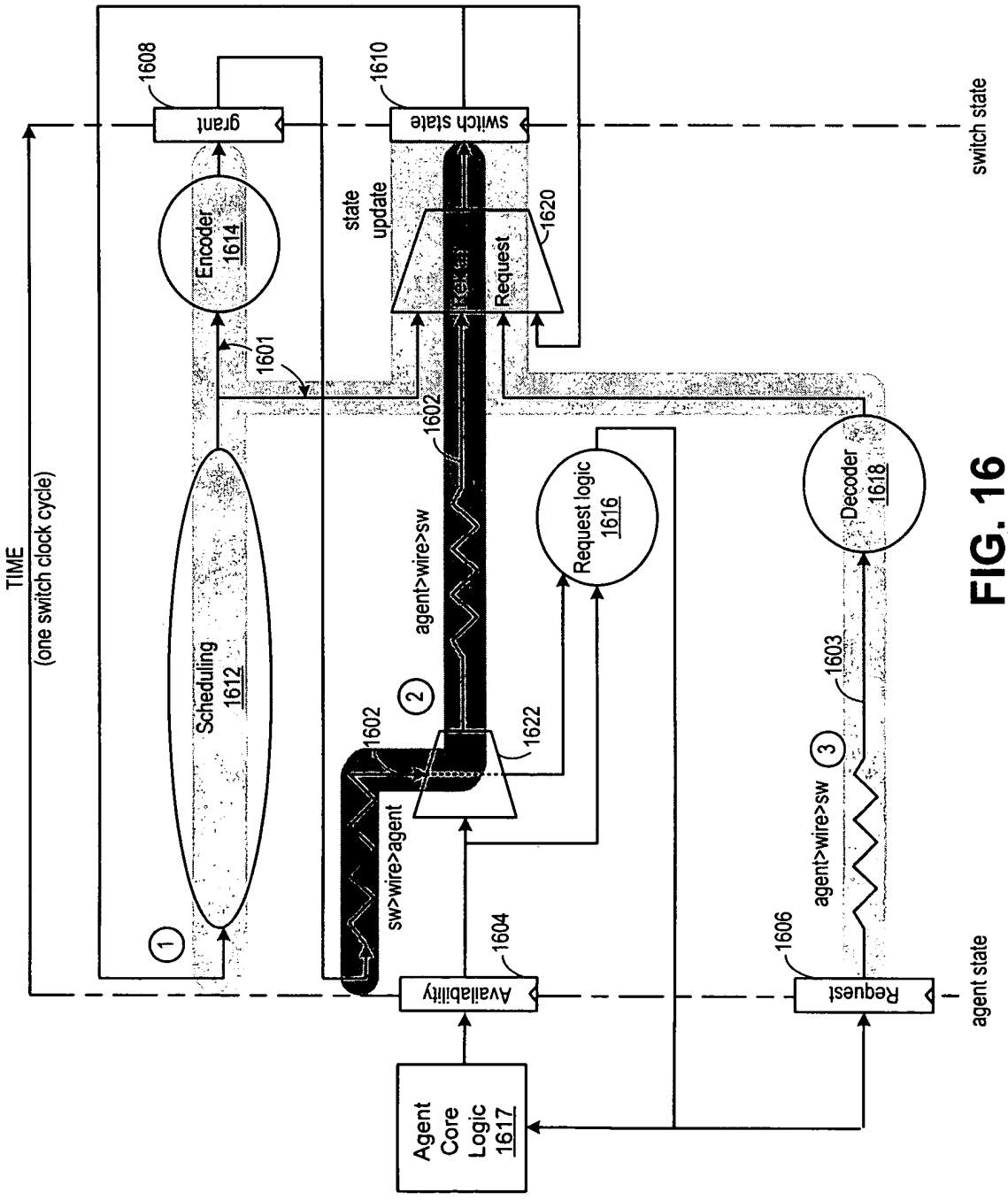

TIME
(one switch clock cycle)
1608
grant
1610
switch state
switch state
Encoder 1614
state update
1620
Request
1601
1602
Scheduling 1612
agent>wire>sw
Request logic 1616
Decoder 1618
1603
1622
sw>wire>agent
agent>wire>sw
1604
1606
Availability
Request
agent state
Agent Core Logic 1617

FIG. 16

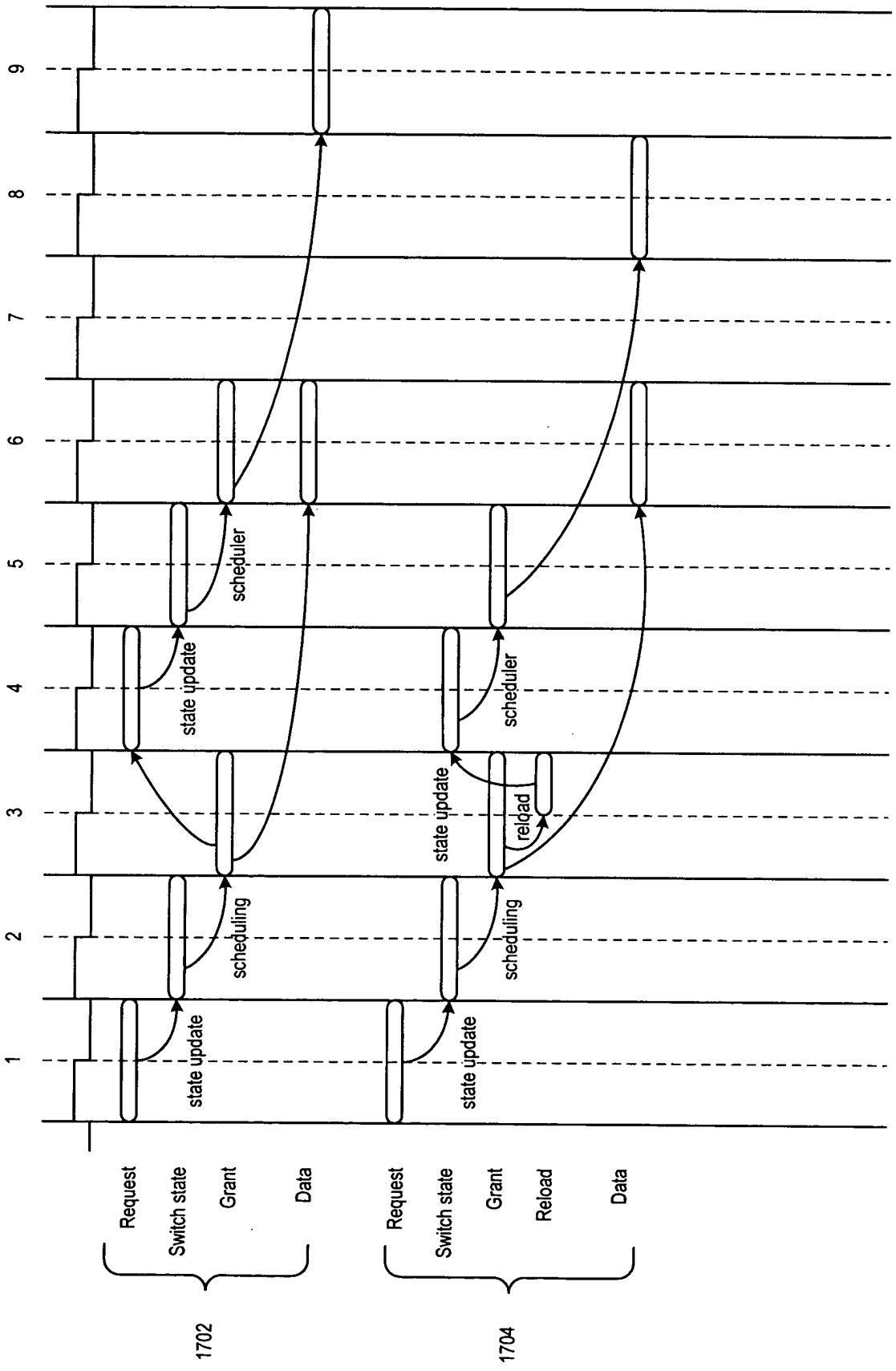

1
2
3
4
5
6
7
8
9
state update
scheduling
scheduler
state update
scheduler
state update
reload
scheduling
state update
Request
Switch state
Grant
Data
Request
Switch state
Grant
Reload
Data
1702
1704

FIG. 17